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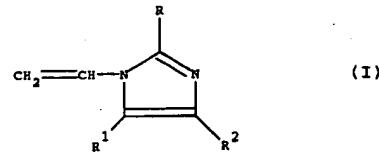
Dye transfer inhibitors for detergents contg. bleaching agents comprise fine particles of cross linked polymers contg. 1-vinyl pyrrolidone, 1-vinyl imidazole or 4-vinyl pyridine-N-oxide units (Eng)

C97-006923 N(CA JP US) R(AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE)

Addnl. Data: BOECKH D, JAEGER H, FUNHOFF A, SCHADE C, STEIN S.

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Additives for detergents, contg. bleaching agent and max. 8 wt.% alkyl benzene sulphonate and used to prevent dye transfer during washing, comprise fine particulate, water-insoluble cross-linked polymers (P) contg. 1-vinylpyrrolidone and/or 1-vinylimidazole units of formula (I) or 4-vinylpyridine-N-oxide, with at least 90 wt.% of (P) having a particle size of 0.1-500 µm.



R, R¹ and R² = H, 1-4C alkyl or phenyl.

Detergents comprising anionic and nonionic surfactants (max. 8 wt.% alkyl benzene sulphonate), 5-30 wt.% bleaching agent and 0.05-10 wt.% of the above additives are also claimed.

USE

Used in ordinary household detergents.

ADVANTAGE

(P) are not oxidised by bleach systems in detergents.

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PREFERRED COMPOSITION

At least 90 wt.% of (P) particles are 0.1-250 (0.1-50) µm in size. (P) are prep'd. by (reverse) suspension-, pptn. - or popcorn-polymerisation. (P) contain N, N'-divinylethylene urea cross-linking units, together with 1-vinylpyrrolidone, 1-vinylimidazole and/or 2-methyl-1-vinylimidazole.

The detergents also contain 0.1-15 wt.% bleach activator.

EXAMPLE

400 g acetic acid ethyl ester, 100 g 1-vinylimidazole, 10 g N, N'-divinylethylene urea and 1 g t-butyl perpivalate were heated for 2 h at 72 °C., and then the reaction prod. was filtered, washed with 100 g acetic acid ethyl ester and dried at 50 °C under vacuum to give a fine particulate white powder corresponding to a yield of 90%.

A detergent was prep'd. comprising 0.5 wt.% of the above polymer, 22.9 wt.% Na perborate tetrahydrate, 3.8 wt.% tetra acetyl ethylene diamine 7.7 wt.% Na lauryl sulphate, 0.6 wt.% soap 3 wt.% ethoxylated (3 EO) 13/15C oxo-alcohol, 3 wt.% ethoxylated (10 EO) 13/15C oxo-alcohol, 25 wt% zeolite.A, 3.9 wt.% Na di-silicate, 2.9 wt. Na₂SO₄ 13.6 wt.% Na₂CO₃ 1.3 wt.% CMC, 5 wt.% acrylic acid/maleic acid copolymer (mol. wt. = 70000), 6.8 wt.% citric acid

and balance H₂).

5 g/l of this detergent was used in water at 60 °C and contg. 3 mmol/hardness to clean 2.5 g coloured fabric and 2. 5 g bleached cotton material for 30 mins. in a single laundry cycle. Colour transfer inhibition for fabrics dyed with Direct Red 212, Direct Black 22, Direct Orange 39, Direct Black 51 and Direct Blue 71 was 40.7 (56.7), 74.8 (28.2), 24(8), 63 (3.4) and 56.8(83.7)% respectively. Figs. in brackets are for similar detergent contg. polyvinylpyrrolidone (K-value = 50) instead of the above polymer.

A similar laundry process with 5 cycles resulted in a reduction in colour of 36.4 (40.6) and 35.5(41.1)% for fabrics dyed with Direct Blue 71 and Direct Red 212 respectively. Figs in brackets are also for detergents contg. polyvinylpyrrolidone. (JS)
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